

TRANSMITTAL FORM FOR FILING PATENT APPLICATION

Attorney
Docket No.: AK-334XX

WEINGARTEN, SCHURGIN, GAGNEBIN & HAYES LLP
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Express Mail No: EL 418428674 US
Date: October 26, 2000

BOX PATENT APPLICATION
Assistant Commissioner for Patents
Washington, D.C. 20231

First Named Inventor or Application
Identifier: Kenji Ikeda

Sir:

Transmitted herewith under 37 CFR § 1.53 for filing is the patent application of:

Inventor: Kenji Ikeda and Takashi Shimogata

Entitled: METHOD FOR STRETCH BLOW MOLDING WIDE-MOUTHED CONTAINER

[] This is a request for filing a [] **continuation** [] **divisional** [] **continuation in part** application under §1.53(b) of prior Application No. _____, filed _____ entitled:

Enclosed are:

[X] 13 pages of written description, claims and Abstract, inclusive

[X] 2 sheets of [] informal [X] formal drawings of Figs. 1-4 (one set)

[X] Oath or Declaration

[X] Newly executed (original or copy)

[] Copy from prior application (37 CFR 1.63(d)) (for continuation/divisional).

The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

[] To be filed later

[X] Cover sheet and Assignment of the invention to: A.K. TECHNICAL LABORATORY, INC.

[X] Certified copy of a Japanese application (if foreign priority is claimed) with letter claiming priority under Rule 55.

[] Information Disclosure Statement with ___ citations

[] Preliminary amendment is enclosed.

[X] Return receipt postcard

[] Other:

Attorney Docket No.: AK-334XX

TRANSMITTAL FORM FOR FILING PATENT APPLICATION (CONTINUED)

- ☒ Verified statement of Small Entity status (\$1.9 and \$1.27)
- ☐ Verified statement of Small Entity was filed in prior application. Status still proper and desired
- ☐ Priority is claimed under 35 USC § 120 as indicated on the attached sheet 4.
- ☒ Priority is claimed under 35 USC §119(a)-(d) as indicated on the attached sheet 4.
- ☐ Priority is claimed under 35 USC §119 (e) as indicated on the attached sheet 4.
- ☐ _____ is hereby appointed Associate Attorney by:
Registration No.:

Attorney of Record
Registration No.:

- ☐ **Power of Attorney** in the originally-filed application has been granted to one or more of the registered attorneys listed below. The attorneys listed below not previously granted power in the originally-filed application, as well as _____, are hereby given associate power:
Registration No.:

Stanley M. Schurgin, Reg. No. 20,979
Charles L. Gagnebin III, Reg. No. 25,467
Paul J. Hayes, Reg. No. 28,307
Victor B. Lebovici, Reg. No. 30,864

Eugene A. Feher, Reg. No. 33,171
Beverly E. Hjorth, Reg. No. 32,033
Holliday C. Heine, Reg. No. 34,346
Gordon R. Moriarty, Reg. No. 38,973

- ☐ Cancel in this application original claims _____ of the prior application before calculating the filing fee.
- ☐ Add in this application claims _____ per amendment before calculating fee.

CLAIMS FILED:	MINUS BASE:	EXTRA CLAIMS:	RATE:	BASIC FEE:
				\$710.00
Independent	1 - 3	= 0	x \$80.00 =	0
Total	2 - 20	= 0	x \$18.00 =	0
<input type="checkbox"/> Multiple Dependent Claims (1st presentation)			+ \$270.00 =	0
SUBTOTAL FILING FEE				\$710.00
Small Entity filing, divide by 2. (Note: verified statement must be attached per \$1.9, \$1.27, \$1.28.)				\$355.00
TOTAL Filing Fee				\$355.00

Attorney Docket No.: AK-334XX

TRANSMITTAL FOR FILING PATENT APPLICATION (CONTINUED)


JCS41 U.S. PTO
09/697418
10/26/00

- ☒ The filing fee has been calculated above; a check in the amount of \$355.00 is enclosed.
- ☐ The filing fee will be submitted at a later date.
- ☒ In the event a Petition for Extension of Time under 37 CFR §1.17 is required by this paper and not otherwise provided, such Petition is hereby made and authorization is provided herewith to charge Deposit Account No. 23-0804 for the cost of such extension.
- ☒ The Commissioner is hereby authorized to charge payment of any additional filing fees under 37 CFR §1.16 associated with this communication or credit any overpayment to Deposit Account No. 23-0804.

[X] Customer Number 207

Address all future communications to:

WEINGARTEN, SCHURGIN, GAGNEBIN & HAYES LLP
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Attorney of Record: Charles L. Gagnebin III
Registration No. 25,467

Attorney Docket No.: AK-334XX

TRANSMITTAL FOR FILING PATENT APPLICATION (CONTINUED)

☐ Priority is claimed under 35 USC § 120 of prior Application(s)
No. _____, filed _____, entitled:

☐ The above-identified application(s) is/are assigned of record to:

☒ Priority is claimed under 35 USC § 119 (a)-(d) of the following application(s).

11-310021	Japan	October 29, 1999
(Application Number)	(Country)	(Filing Date)

_____	_____	_____
(Application Number)	(Country)	(Filing Date)

_____	_____	_____
(Application Number)	(Country)	(Filing Date)

☐ The above-identified application(s) is/are assigned of record to:

☐ Priority is claimed under 35 USC § 119 (e) of the following provisional application(s).

_____	_____
(Application Number)	(Filing Date)

_____	_____
(Application Number)	(Filing Date)

_____	_____
(Application Number)	(Filing Date)

☐ The above-identified provisional application(s) is/are assigned of record to:

☐ The claim of small entity status in the above-identified provisional application(s) is made in this application and a copy of the small entity form(s) from the provisional application(s) is/are enclosed.

SUBMIT IN TRIPLICATE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Kenji Ikeda, et al.

ATTORNEY

DOCKET NO.: AK- 334XX

APPLICATION NO.:

EXAMINER:

FILED: HERewith

GROUP NO.:

PATENT NO.:

ISSUED:

ENTITLED: METHOD FOR STRETCH BLOW MOLDING WIDE-MOUTHED CONTAINER

VERIFIED STATEMENT AS SMALL ENTITYAssistant Commissioner for Patents
Washington, D.C. 20231

Sir:

THE UNDERSIGNED DECLARE(S) :

Exclusive rights in the above-identified invention reside in the "small entity(ies)" defined and named below or in a Verified Statement as Small Entity filed by other such small entity(ies), and "small entity" fees are appropriate. Qualification as a small entity is based upon the appropriately checked statements below:

[] INDEPENDENT INVENTOR(S)

The below-signing independent inventor(s) has (have) not assigned, granted, conveyed or licensed, and is (are) under no obligation under contract or law to assign, grant, convey or license any rights in the invention to any person who could not likewise be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

[X] SMALL BUSINESS CONCERN

The below-identified small business concern qualifies as a small business as defined in 13 CFR 121.1301 through 121.1305, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, in that the number of employees, including those of its affiliates, which does not exceed 500 persons, and it has not assigned, granted, conveyed or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Express Mail Number

EL 418 428 674 45

Concerns are affiliates of each other when, either directly or indirectly, one concern controls or has the power to control the other, or a third party controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

☐ **NONPROFIT ORGANIZATION** (Check additional applicable box.)

The below-identified nonprofit organization qualifies as a small entity under 37 CFR 1.9(e) in that it constitutes:

1. ☐ a university or other institution of higher education located in any country; or
2. ☐ an organization of the type described in Section 501(c)(3) of the Internal Revenue Code of 1954 (26 USC 501(c)(3)) and exempt from taxation under Section 501(a) of the Internal Revenue Code (26 USC 501(a)); or
3. ☐ any nonprofit scientific or educational organization qualified under a nonprofit organization statute of a state of the United States (35 USC 201(i)); or
4. ☐ any nonprofit organization located in a foreign country which would qualify as a nonprofit organization under paragraphs (e)(2) or (3) of Rule 1.9 if it were located in the United States.

The undersigned acknowledge(s) the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate (37 CFR 1.28(b)).

The below-signing individual(s) hereby declare(s) that (he, she, they) are authorized to execute this statement on behalf of the small entity.

Name of Small Entity: (Independent Inventor/Small Business/Nonprofit) A.K. Technical Laboratory, Inc.	
Address of Small Entity: (Street, City, State or Country, Zip Code) 4963-3, Ohazaminamijo, Sakaki-machi, Hanishina-gun, Nagano-ken, Japan	
Name of Person Signing: (Small Business/Nonprofit)	
Title of Person Signing: (Small Business/Nonprofit)	
Signature: (Please sign and date in permanent ink.) X <i>Minoru Ikeda</i>	Date signed: X August 8, 2000

CLG:mes/215358

TITLE OF THE INVENTION

METHOD FOR STRETCH BLOW MOLDING WIDE-MOUTHED CONTAINER

BACKGROUND OF THE INVENTION

5 1. Field of the invention

The present invention relates to a method for stretch blow molding a wide-mouthed container which is used as a packaging container for processed food, confectionery, or the like and which is made of thermoplastic resins.

10 2. Detailed Description of the Related Art

Stretch blow molded packaging containers which is made of thermoplastic resin and which have a thin wall thickness of a body portion are known. Examples of the thermoplastic resin used therefor includes polyesters, polypropylene and
15 polycarbonate, and particularly bottles for beverages made of polyethylene terephthalate are generally and widely known as so-called "PET bottle".

One of the stretch blow molding methods is a method in which a preform having a mouth portion, a body portion and a
20 bottom portion is injection molded within an injection mold, the perform is released from the injection mold in a state where the inside thereof is still in a high temperature while holding the mouth portion of the preform, which is cooled and solidified, with a lip mold, the preform is transferred to a blow mold as
25 it is, and the preform is stretch blow molded within the blow

mold into a container such as a bottle having a thin wall of the body portion.

In such a molding method, the temperature of the outer and inner surfaces of the preform is lowered below an orientation temperature due to cooling during injection molding. After releasing the preform, the outer and inner surfaces of the preform are heated by utilizing the heat inside the preform till performing stretch blow molding to increase the surface temperature to the orientation temperature. At the same time, the temperature inside the preform body portion except the mouth portion held by the lip mold is lowered to the predetermined orientation temperature. After then, stretch blow molding is performed.

By the way, a wide-mouthed container used for a packaging container for jam, peanut butter, candies or the like has a wider mouth portion than a bottle for beverages. Further, because of the shape of the container, outside diameter of the body portion thereof is limited so as to be a slightly larger than that of the mouth portion to some extent. In case where the body portion of the preform for a wide-mouthed container is formed similarly to that for a bottles in a longitudinal direction, since the radial stretching ratio is small, it is difficult to obtain a container of which body portion is made thinner wall by air blowing. In order to solve this problem, a preform for a wide-mouthed container is formed to have a

conical-shaped body portion or a truncated-conical-shaped one, thereby enabling of setting the stretching ratio relatively large.

When the preform for such a wide-mouthed container is stretch blow molded after lowering the preform temperature to a set temperature after releasing in a high temperature state, a connecting portion between the mouth portion and the body portion becomes thicker than other portions of the body portion. As a result, thinning of the body portion just below the mouth portion cannot be achieved, and in some cases a ring-shaped thicker portion appears just below the mouth portion. This makes the appearance of the resulted container worse as a packaging container, and it would be considered as a reject.

The reason why this connecting portion becomes thicker is that heat at the connecting portion is transferred to lip mold or blow core inserted into the mouth portion during stretch blowing, resulting in heat loss at the connecting portion. After releasing the preform, it is transferred to the blow mold while holding the mouth portion of the preform with the lip mold. Accordingly, during the transferring after releasing and after transferring the preform within the blow mold, heat exchange between the lip mold and the connecting portion of the body portion which is still in a high temperature state via the mouth portion is still continued. As a result, temperature at the connecting portion is lowered below the temperature of the other

body portion which is exposed to the atmosphere, and it is difficult to stretch the connecting portion more than the other body portion.

In order to solve the problems, in the conventional method, the heat loss due to the heat exchange with the lip mold is compensated by increasing the thickness of the associated body portion to increase the heat amount to be held thereby. However, there is a certain limit to increase the wall thickness. For example, if the wall thickness of a preform made of polyethylene terephthalate is 4.0 mm or more, the outer surface where the wall thickness thereof is thickened is whitened during its transferring to the blow mold. This results in a light whitened stain on the container molded by stretch blow molding. Particularly, in such a case where the wide-mouthed container for packaging, as shown in Fig. 4, is formed to have a tapered surface at the upper body portion to be capable of visual inspection of contents from outside therethrough, such a defect would be a fatal damage and deteriorate commodity value thereof. Thus, there is a problem that such a container cannot be commercialized.

SUMMARY OF THE INVENTION

The present invention has been devised to solve the above mentioned problems for the wide-mouthed container by stretch blow molding, and an object of the present invention is to

provide a novel method for stretch blow molding a wide-mouthed container which is capable of stretching the entire body portion including the connecting portion with the mouth portion to a thinner wall thickness by employing a preliminary stretching
5 within a blow mold before stretch blowing without making the upper body portion be thicker.

In order to achieve the above-mentioned object, the present invention is to provide a method for stretch blow molding a wide-mouthed container, comprising the steps of
10 injection molding a preform having a large diameter mouth portion, a body portion and a bottom portion within an injection mold, releasing the perform from the injection mold in a state where the inside thereof is still in a high temperature while holding the mouth portion of the preform, which is cooled and
15 solidified, with a lip mold, transferring the preform to a blow mold as it is, and stretch blow molding the preform into a desired container, wherein before the stretch blowing step of the preform a stretching rod is descended to a predetermined length to preliminary stretch the body portion in some extent, thereby
20 thinning a connecting portion of the upper body portion between the body portion and the mouth portion, and after then the entire body portion is stretch blow molded.

Further, in the present invention, the body portion of the preform is formed in a conical shape in which the body portion
25 is made thicker than the mouth portion and the diameter of the

body portion is gradually decreased towards the bottom portion, and the body portion is preliminary stretched to about 10 mm length to thin the wall thickness of the upper body portion.

According to the present invention, the wall thickening phenomenon at the connecting portion between the mouth portion and the body portion of a wide-mouthed container can be improved, thereby enabling to obtain a wide-mouthed container for packaging which has a uniform body wall thickness and a well finished connecting portion. As to the molding step therefor, it is not required to use any additional special means or the like, but a preliminary stretching by a stretching rod in a vertical direction is simply carried out as an additional step before the stretch blow molding step. Accordingly, the present invention is directly applicable to the above-mentioned conventional molding method without increasing the molding cycle, thereby solving the problems as above.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects, features and advantages of the present invention will be apparent from the following detailed description of the preferred embodiments of the invention in conjunction with the accompanying drawings, in which:

Fig. 1 is an explanatory view showing a step of a method for stretch blow molding a wide-mouthed container according to

the present invention, in which a preform is set within a blow mold before preliminary stretching shown as a longitudinal cross section;

Fig. 2 is a longitudinal cross section of the preform within the blow mold after preliminary stretching;

Fig. 3 is a longitudinal cross section of the preform showing its wall thickness change by the preliminary stretching; and

Fig. 4 is a half of a longitudinal cross sectional front view of a wide-mouthed container prepared by the stretch blow molding method according to the present invention.

PREFERRED EMBODIMENTS OF THE INVENTION

Preferred embodiments of the present invention will now be described in detail below with reference to the accompanying drawings. Besides, the present invention is not limited thereto.

In the drawings, reference numeral 1 denotes a preform for a wide-mouthed container. The preform 1 includes a mouth portion 2, and a body portion 3 having a bottom portion. The diameter of the mouth portion 2 is about 70 mm and the thickness thereof is about 1.5 mm. The body portion 3 is integrally formed with the mouth portion 2 from its lower edge to have a height of 50 mm and the thickness of the body portion is about 3.4 to 3.9 mm. In the present embodiment, polyethylene terephthalate

is used as a thermoplastic resin.

This body portion 3 is formed to have a thin wall from a connecting portion 3a of the mouth portion 2 to the bottom portion 4. The body portion 3 is made in a conical shape by gradually decreasing its diameter toward the bottom portion. The inside bottom surface of the bottom portion 4 is made in a circular plane to abut a tip end member 6 of a stretching rod 5.

The preform 1 having a configuration above is formed by injection molding similar to the prior art. During injection molding, a skin layer is formed inside and outside surfaces of the preform by cooling by means of an injection mold. The preform is released in a high temperature state while the formed skin layer maintains the shape of the preform. The preform is transferred into a blow mold 8 while the neck portion (or mouth portion 2) which is cooled and solidified is held with the neck mold 7. After closing the mold, a blow core 9 equipped with the stretching rod 5 is hermetically inserted above into the mouth portion, thereafter stretch blow molding is carried out to form a wide-mouthed container 11 shown in Fig. 4.

The stretch blow molding is carried out after waiting (for about 2 seconds) till the temperature of the body portion except for the mouth portion 2 of the preform 3 be lowered to a predetermined orientation temperature. During the stand-by, the heat at the upper body portion is decreased due to cooling

by the lip mold 7 and the blow core 9 and the temperature at the associated portion is lower than the other body portion 3. As a result, it would be difficult for the portion to be stretched. In order to solve this problem, during the stand-by time interval the stretching rod 5 is descended so as that the body portion 3 is preliminary stretched longitudinally before the upper body portion is excessively cooled. The length for preliminary stretching may be sufficiently about 10 mm, thereby undesirable thickened wall thickness at the upper body portion can be decreased.

Fig. 3 shows the change in wall thickness before stretching (right side drawing) and after stretching (left side drawing). The below-mentioned table shows the change amount of the wall thickness at respective measuring positions (four positions) of A-D at a 5mm interval from the inner lower end of the mouth portion 2. Besides, the stretching length (S) is 10 mm and the length at each of the measuring positions is measured from the inner lower end of the mouth portion 2.

	A	B	C	D
Measuring position (mm)	5	10	15	20
Thickness before stretching (mm)	3.83	3.77	3.54	3.45
Thickness after stretching (mm)	2.24	2.83	3.26	3.43
Decreasing rate (%)	41.3	25.0	8.0	0.5

According to the results, preliminary stretching the preform to 10 mm does not affect the entire body portion to be stretched uniformly, but the stretched portion is concentrated at the upper body portion from the inner lower end of the mouth portion 2 to the portion below about 10 mm in length, thereby thinning the portion.

After performing such a preliminary stretching, successively or after a predetermined time has passed, the stretching rod 5 is extended to the bottom surface of the blow mold 8 while a high pressure air is blown from the blow core. As a result, since the heat amount held by the lower body portion is large due to the difference in the above-mentioned thickness, longitudinal stretching of the lower body portion precedes to be thinned. The temperature at the stretched portion is lowered, resulting in disappearing of the temperature difference between the preliminary thinned upper body portion and the lower body portion. Accordingly, during the stretching process the upper body portion is also longitudinally stretched.

Radial expansion stretching is achieved by introducing blowing air at the same time of the longitudinal stretching, and the upper body portion is further stretched from the connecting portion of the mouth portion to be thinned. This expansion stretching is expanded from the upper body portion to the lower body portion so as to go along with the longitudinal stretching by the stretching rod 5, and finally, the entire body

portion is thinned in a predetermined thickness distribution to form a container body portion 13.

As a result, the wall thickening phenomenon at the connecting portion 13a in a wide-mouthed container 11 which conventionally tends to occur can be improved, thereby enabling to form a container body portion 13 having an almost uniform thickness from the lower end of the container mouth portion 12 to the container bottom portion 14 and also to obtain a wide-mouthed container 11 for packaging which has a uniform body wall thickness and a well finished connecting portion. Further, there is no need to use any specific means or device in the molding process, and it is sufficient for the purpose to preliminary stretch a preform in a longitudinal direction by a stretching rod before stretch blowing. Accordingly, the present invention can be directly applied to a conventional molding method without increasing a molding cycle.

While there has been described what are at present considered to be preferred embodiments of the invention, it will be understood that various modifications may be made thereto, and it is intended that the appended claims cover all such modification as fall within the true spirit and scope of the invention.

What is claimed is:

1. A method for stretch blow molding a wide-mouthed container, comprising the steps of: injection molding a preform having a large diameter mouth portion, a body portion and a bottom portion within an injection mold; releasing the perform
5 from the injection mold in a state where the inside thereof is still in a high temperature while holding the mouth portion of the preform which is cooled and solidified with a lip mold; transferring the preform to a blow mold as it is; and stretch
10 blow molding the preform into a desired container, wherein before the stretch blow molding step of the preform a stretching rod is descended to a predetermined length to preliminary stretch the body portion to some extent, thereby thinning a connecting portion of the upper body portion between the body
15 portion and the mouth portion, and after then the entire body portion is stretch blow molded.

2. The method for stretch blow molding a wide-mouthed container according to claim 1, wherein the body portion of the
20 preform is formed in a conical shape in which the body portion is made thicker than the mouth portion and the diameter of the body portion is gradually decreased towards the bottom portion, and the body portion is preliminary stretched to about 10 mm length to thin the wall thickness of the upper body portion.

ABSTRACT OF THE DISCLOSURE

A method for stretch blow molding a wide-mouthed container, employing a preliminary stretching before stretch blowing without making an upper body portion thickened so as
5 to thin the wall thickness from the connecting portion between the mouth portion and the body portion, thereby preventing the thickening phenomenon at the subjected portion. A preform having a large diameter mouth portion, a body portion and a bottom portion is injection molded within an injection mold.
10 The preform is released from the injection mold in a state where the inside thereof is still in a high temperature while holding the mouth portion of the preform with a lip mold. Then, the preform is transferred to a blow mold as it is. Before the stretch blow molding step of the preform, a stretching rod is
15 descended in a predetermined length to preliminary stretch the body portion in some extent. After thinning a connecting portion of the upper body portion between the body portion and the mouth portion, the entire body portion is stretch blow molded into a wide-mouthed container.

Fig.1

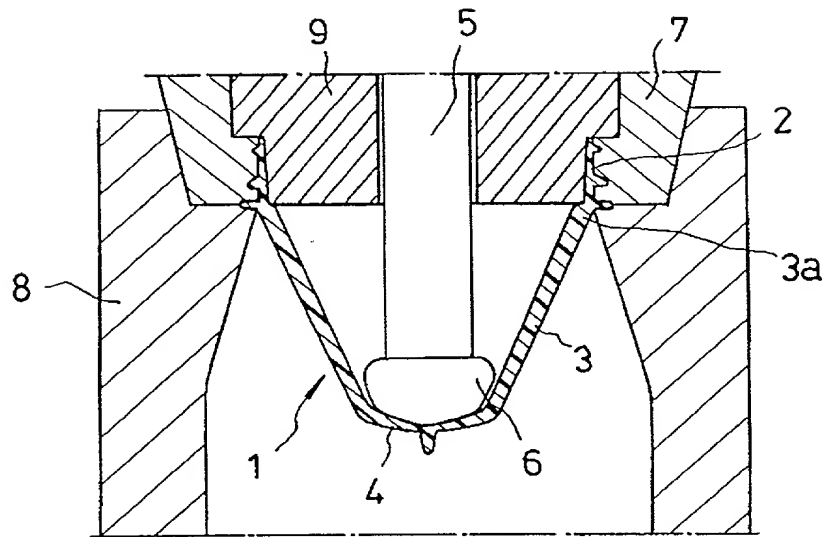


Fig.2

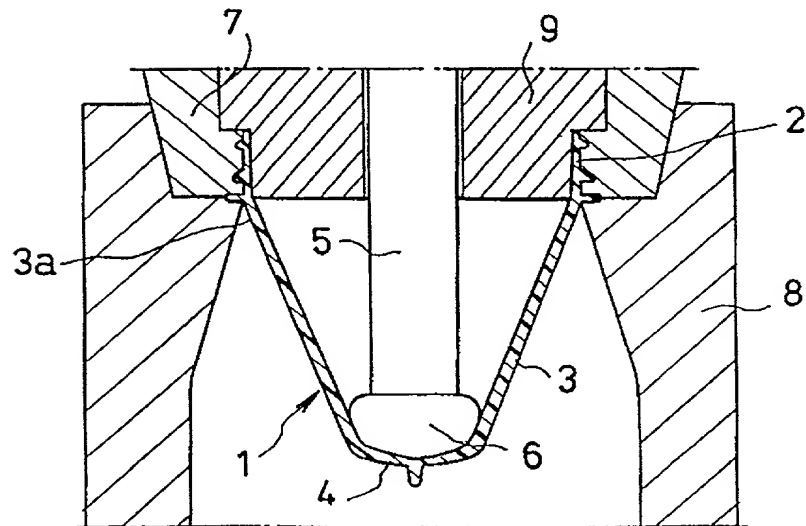


Fig.3

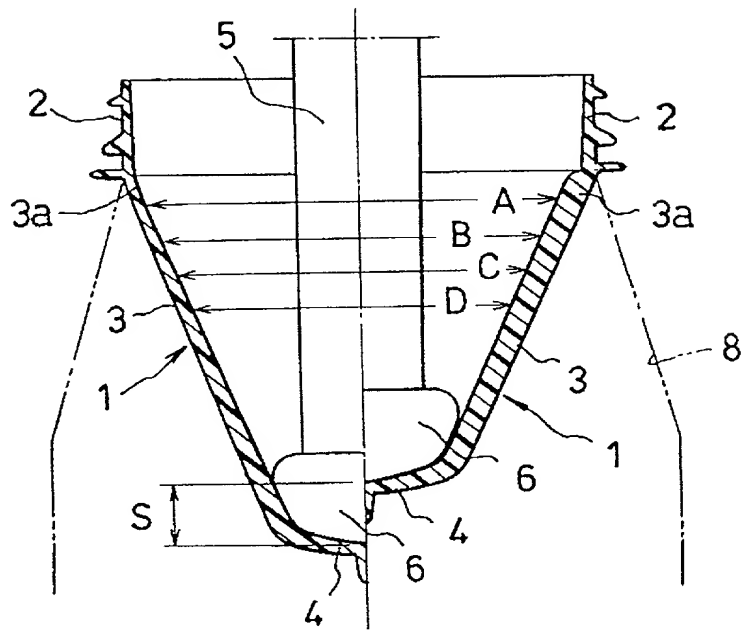
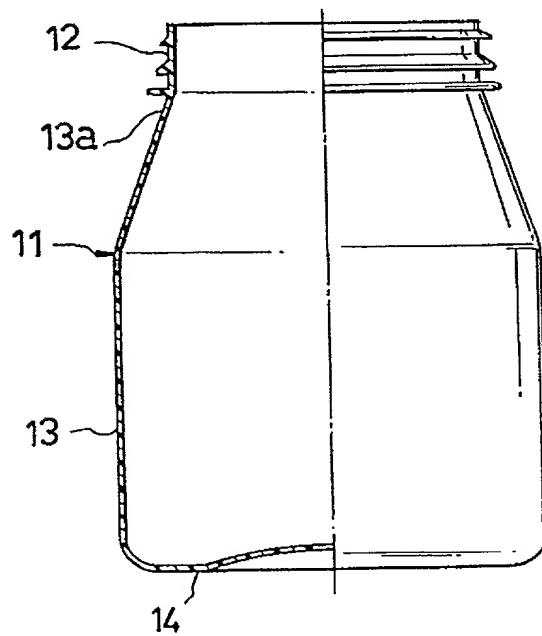


Fig.4



DECLARATION AND POWER OF ATTORNEY

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: Method for stretch blow molding wide-mouthed container

the specification of which (check one):

☒ is attached hereto. ☐ was filed _____ as Application No. _____
amended on _____ (if applicable).

☐ was filed as PCT International Application No. _____ on _____,
and was amended under PCT Article 19 on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations §1.56(a).

I hereby claim foreign priority benefits under Title 35, USC §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

<u>Prior Foreign Application(s)</u>		<u>Date Filed</u>	<u>Priority Claimed</u>	
11-310021	Japan	29/10/99	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year)	Yes	No
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year)	Yes	No

I hereby claim the benefit under Title 35, USC §119(e) of any United States provisional application(s) listed below:

_____ (Application Number)	_____ (Filing Date)
_____ (Application Number)	_____ (Filing Date)
_____ (Application Number)	_____ (Filing Date)
_____ (Application Number)	_____ (Filing Date)

Express Mail Number

EL 418 428 674 65

Attorney

Docket No.: **AK-334XX**

I hereby claim the benefit under Title 35 USC §120 of any United States application(s) listed below and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35 USC §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application No.)	(Filing Date)	(Patented/pending/abandoned)
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(Application No.)	(Filing Date)	(Patented/pending/abandoned)
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(Application No.)	(Filing Date)	(Patented/pending/abandoned)
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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) to prosecute this application and transact all business connected therewith in the Patent and Trademark Office, and to file with the USRO any International Application based thereon.

Stanley M. Schurgin, Reg. No. 20,979

Charles L. Gagnebin III, Reg. No. 25,467

Paul J. Hayes, Reg. No. 28,307

Victor B. Lebovici, Reg. No. 30,864

Eugene A. Feher, Reg. No. 33,171

Beverly E. Hjorth, Reg. No. 32,033


Holliday C. Heine, Reg. No. 34,346

Gordon R. Moriarty, Reg. No. 38,973

Address all correspondence to:

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 Boston, Massachusetts 02109
 Telephone: (617) 542-2290
 Telecopier: (617) 451-0313

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole/First Inventor: Kenji Ikeda		
City of Residence Nagano-ken	State or Country Japan	Country of Citizenship Japan
Post Office Address: c/o A.K. Technical Laboratory, Inc., 4963-3, Ohazaminamijo, Sakakimachi, Hanishina-gun	City Nagano-ken	State or Country Zip Code Japan
Signature: (Please sign and date in permanent ink.) X 		Date signed: X August 8, 2000

Attorney

Docket No.: AK-334XX

Full Name of Second Inventor: Takashi Shimogata		
City of Residence Nagano-ken	State or Country Japan	Country of Citizenship Japan
Post Office Address: c/o A.K.Technical Laboratory, Inc., 4963-3, Ohazaminamijo, Sakakimachi, Hanishina-gun	City Nagano-ken	State or Country Zip Code Japan
Signature: (Please sign and date in permanent ink.) X 下 形 隆		Date signed: X August 8, 2000

Full Name of Third Inventor:		
City of Residence	State or Country Japan	Country of Citizenship Japan
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Signature: (Please sign and date in permanent ink.) X		Date signed: X

Full Name of Fourth Inventor:		
City of Residence	State or Country Japan	Country of Citizenship Japan
Post Office Address	City	State or Country Zip Code Japan
Signature: (Please sign and date in permanent ink.) X		Date signed: X